Art Unit: 3724

Response to Detailed Action:

1. Drawings: Confirmed the acceptability as submitted 08/29/06.

2. Specification: Disclosure objection stated the need for reference signs for "teeth" and "window opening". Please note this item was previously addressed in the submittal of 08/29/06 on the Claims, the Drawing and the Detailed Description of the Invention:

"teeth" added "teeth 16"

"window opening" added "window opening 17"

3. Claim Objections: informalities noted for change:

Line 1 "The Invention is a"; changed to "A"

Line 3-4 "potato-chip"; changed to "potato chip"

Line 6 "sharp blade"; changed to "fixed vertical blade"

Line 8 "a fixed"; changed to "the fixed"

Line 9 "base 1"; changed to "base 8"

Line 21 "prevents"; changed to "prevent"

Line 15 & 41 "two elements have the same name lock nut". Please note this item was previously addressed in the submittal of 08/29/06 on the Claims, the Drawing and the Detailed Description of the Invention making them distinct from each other: "lock nut 15" and "lock nut 12"

4. Claim Rejections : 35 U.S.C. 103 (a) was again utilized in comparing the apparatus of the invention with prior art.

Response to claim rejections: This review of the examiners findings is hereby submitted in response to the 07/26/07 mail date office action detailing the examination of the apparatus of the invention. In that examination it was noted (page 7, lines 3-6) that prior art dates back to the

1800's and early 1900's. Because of the passage of time from those prior periods the text and drawings of prior art present difficulties with interpretation. This is primarily due to the vernacular common to prior periods and the nomenclature describing prior art being different than it is today.

In the Office Action Response to Communications of 07 March 2006 the Claim Objections listed on Page 3, Line 6 and 7 stated: "In general the claims are difficult to read and require the applicant to simplify the language". This simplification may have resulted in some lost detail which could serve to delineate more clearly the differences existing between the apparatus of the invention and prior art.

5. Ross 2,464,993

Ref. Sharp fixed blade 9, fig 4 and 5

This blade as illustrated by Ross is not a flat blade nor is it angled as is the blade of the apparatus of the invention. The top of the blade is positioned approximately on the mounting plate centerline and the blade bottom positioned at an angle approximately 50 degrees from the blade top when viewed from the feed plate side toward a potato. This blade has an offset from that portion of the blade which is drilled for mounting screws 14 and 15 to that portion of the blade which is sharpened. See Col. 3, lines 36-38 "Cutter Blade 9 is positioned so that the cutting edge thereof is just 9/32 from its supporting plate". Col. 4, lines 10-12 "a slightly slanted elongated blade having a cutting edge spaced a predetermined distance from the fixed plate". The apparatus of the invention has a flat blade excepting the tab at the blades top which is formed to secure it to the top of the blade holder. The bottom portion of the blade is drilled for a mounting screw. The blade is mounted flush and flat

against the blade holder. In assembly the blade holder is angled such that the blade achieves an angle of 20 degrees as shown on fig 2 of the drawing 1/1. This was not an obvious element but designed to reduce the amount of forward thrust required to spiral slice a potato. In turn it aided in the utilization of the American Standard Uniform Thread Form by lowering the forces toward disengagement. In prior art a potato is compressed against a flat blade with little or no angle, and while under compression the potato is rotated clockwise. The uncompressed portion of the potato equal to the feed rate as rotated then passes the sharpened blade edge and a cut occurs. Compression is virtually avoided with the cutting of the angled blade of the apparatus of the invention. The examiners finding noted on Page 3, line 13-16 that a blade shape or angle was "in order to prevent sliced pieces from falling to the floor" does not correctly identify the purely technical reason as is described above.

In actuality the potato is discharged at the front of the device it being approximately 12 inches from the counter or table top edge when discharge occurs.

Support Legs- The Stabilization and/or Mounting Method of the apparatus of the invention is an element shown to be non-obvious. Various mounting methods including clamping, suction cups, magnets and mechanical devices were tested in the experimentation and development of the apparatus of the invention. Although the device creates a lower torque than prior art by approximately 75% as it is cutting a potato, it still requires stabilization when operating. It is light in weight and portable with the design capacity to handle potatoes weighing one pound and approximating 4 inch diameter. Both long and short legs were tested as were a combination of lengths in various types of material. Legs of rubber were selected for the rubbers skid resistance. In

addition spring type counter stops were designed to aid in prepositioning the device on the front edge of a table or counter top and to further stabilize it during operation. These counter stop arms are located toward the back underside of the apparatus of the invention. In operating the device the left hand thumb is used to engage the drive nut to the spindle with the heel of the left hand pressing downward on the base 8. The left hand heel pressure, support legs and counter stop arms in combination with each other are what stabilize the device and contain the pressures exerted when it is being operated. During the search no hand operated device was found to have this configuration of stabilization as the apparatus of the invention. The examiners review reference of Waller 2,156,645 "having 2 metal spring type counter stop arms 2 in fig. 1" . Waller in fig. 12 shows "adjustable spring clip 2 (part number) for mounting to a suitable support 10 such as a table, or bread board or the

like". The single spring clip functions to prevent the device from rising when cranked as that would allow the frame structure to be disengaged from the slide mount. The counter stop arms of the apparatus of the invention differ in their design and application. The counter stop arms contact the edge of the counter only and do not clip under the surface upon which the device is operated. Mason 3,211,202 referenced in the claim rejection as having rubber legs was not found in examination of either the claim or the drawing. The fig. 2 and fig. 3 of Mason shows views of 4 supports beneath the housing of a motor operated device. All forces of cutting with this device are contained within the housing 33. Any material type, though none is identified could function to support this device. No reference is found in Mason's claim for these supports or the material type.

Stabilization during use in cutting a potato is the technically designed purpose of the rubber support legs, spring type

counter stop arms and left hand heel pressure. In the examiners review Page 4, lines 4-7 indicated the purpose of the stabilization elements being "portability for cleaning and rearranging and preventing damage to undersurface" . These are inherent additional advantages to the stabilizing effect accomplished in the design of the apparatus of the invention.

Guide with a drive nut attached - Examiner reference Page 6, lines 18 through 21 "Ross discloses a drive nut guide 21 with a drive nut 27, 28 and 32 that requires a user to use both hands to operate the apparatus and avoid injury. Therefore, the drive nut guide with a drive nut assembled to it positioning the drive nut adjacent to the drive nut spindle is not unique".

Please note Ross 2,464,993 both hands are not used as is shown in Ross Column 2, lines 6 through 12

"The extending flanges 6 and 7 on each side of the bar have

holes to accommodate the wood screws 8, these screws securely holding the device in place so as to make it unnecessary to employ one hand to hold the device while the other hand is rotating the crank thereof ".

Thread Form- This specific element pertains to the utilization of American Standard Uniform Thread Form 3/8-16. This form was selected to be utilized when developing the apparatus of the invention to reduce the input forces in inch/pounds required to spiral slice a potato. This reduced input force translates to a lower torque permitting the use of a short length crank and significantly lower forces to be contained by the stabilization technique as designed. It is utilized to provide control of cutting the desired potato slice thickness with 3/8 inch diameter 16 threads per inch to generate a .063 inch thick slice. The material type for this food service application mandated stainless steel. Therefore stainless steel material was selected to be used to make the

spindle. If stainless steel barstock was to be individually threaded for the spindle for the apparatus of the invention it would require a geometric die head at a highly expensive manufacturing cost. Commercially available stainless allthread rod as a least cost alternative was selected. However the use of such threaded material involved overcoming some specific problems. This stainless steel allthread rod is roll threaded which produces a (rolled) rough edge at the crest of the thread. This rough crest would be detrimental to the mating component of the apparatus of the invention. This was resolved by mechanically removing that rolled rough edge portion which is technically above the crest of the thread. A problem of greater magnitude was overcoming the forces toward disengagement of this American Standard Uniform Thread Form. In operation of the apparatus of the invention the threaded spindle is engaged by a drive nut. When the spindle is rotated to exert forward

thrust the thread angle between the root and crest of the thread have a greater tensile stress area due to having a greater thread angle than other thread forms most specifically Acme (near square tooth form) and Buttress (one side of tooth near square and the other side angled) . All prior art in the search uses either the Acme or Buttress thread forms. Distinct stress differences exist in the application of American Standard Uniform Thread Form from those existing with Acme or Buttress Thread Forms in providing forward thrust. The major difference is in maintaining engagement under load (forward thrust).

Comparison of thread form angles:

Buttress Thread- for high stresses along a thread axis in one direction only. The thrust side of the standard Buttress thread is (7 degrees) nearly perpendicular to the thread axis.

Acme Thread- the angle between the sides of the threads, measured in an axial plane, is 29 degrees. The line bisecting this 29 degree angle is (14.5 degrees) perpendicular to the axis of the thread.

American Standard Uniform Thread - the angle between the sides of the threads, measured in an axial plane is 60 degrees. (30 degrees) perpendicular to the axis of the thread.

With Buttress Threads being 7 degrees = 100%

Acme Threads being 14.5 degrees = 207% > Buttress

American Std being 29 degrees = 414% > Buttress

The greater the angle the greater the disengagement stress. The angle from root to crest of American Standard Uniform Thread is double the angle of Acme Threads and 4 times greater than the angle of Buttress Threads.

The search of prior art indicates the use of Acme and Buttress Threads only. These thread types freely engage a mating component some of which are single point engagement and are mechanically captured in this engagement. Robb 240,186 shows a single latch engaging the threads of the stem with the latch spring loaded to hold it in position of engagement. The apparatus of the invention uses a method of employing the thumb of the left hand to engage a multiple thread drive nut to the spindle threads utilizing the American Standard Uniform Thread Form. This effects a thread fit nearing interference fit. The drive nut material is brass which is used to avoid galling with the stainless steel material of the rotating spindle. The use of the American Standard Uniform Thread is an original characteristic, nonobvious, and not found in prior art.

Ref.: Robb 240,186 Buttress Thread Fig. 7 flat spring latch i

Fig. 6

Mason 2,489,581 Acme Thread, full thread inside

diameter of frame.

Waller 2,156,645 Manually advanced

Mason 3,211,202 Acme Thread, Split nut 49 Fig. 2

Thread Forms Ref. Machinerys Handbook 22nd Ed.

American Standard Uniform pages 1206-1232

Acme Thread pages 1299-1325

Buttress Thread pages 1327-1334

<u>Blade Angle and Hole in Blade</u>

Examiner Reference page 3, Line 18, 19 "hole 114 through which pilot pin passes" as a characteristic being taught by Mason 2,489,581. Mason 581 has

a core device 15 at the top of the blade to pilot and core the potato prior to cutting. This is not a hole in the blade as in the design of the apparatus of the invention. Ross 3,211,202 Fig. 1 shows a cutting blade 28 with cutting edge 29 as a component section of this attachment 28. The claim Column 8, line 38 through 41 and shown in Fig. 6 through 8 states: "means thereon for holding a potato opposite the chuck while also transferring the rotational motion of the potato to the cutter which is jounaled for rotation". The definition of journal by Webester is " the part of a rotating shaft, axle, roll or spindle that turns in a bearing. Column 5, lines 29 through 31 of Ross 202 state " a screw 24 is axially advanced by the operator so as to engage the potato with spindle 31 carried on attachment 28. This movement is done by hand with the operator holding the potato in proper alignment with one hand while

pushing screw 24 axially with the other hand at handle 66." In addition a self-collecting pin 32 is attached to the journaled spindle 31.

Examiner reference page 6, line 12 " Waller discloses a pilot pin 8a passing through a hole 12 in blade 13 in order to support the weight of the potato and guide the pilot pin". Please note that blade assembly 13 is comprised of plate 16 and blade 19. Further Waller 2,156,645 pg 2, column 2 lines 32 through 39 "The shaft 8 is provided with a pointed end portion 8a which is forced into the body of the potato and serves to position the same axially with respect to the plate 16. Thus plate 16 and shaft 8 engage the other end of the potato and cooperate to support the same for rotation". Shaft 8 goes through the blade assembly plate 16 but it does not go through the blade 19.

Therefore the pilot pin passing through a hole in the blade of the apparatus of the invention is unique. The apparatus of the invention has a fixed pilot which goes through the angled blade upon which the potato rotates. The effect is to present the potato to the angled blade for the spiral cut. The specific differences of the apparatus of the invention are thus defined. A flat blade as in Ross 202 which is "disposed perpendicular to the axis of rotation of the potato" produces a compression cut which is prior art. The apparatus of the invention is not a compression cut but with an angled blade, with a potato piloted by a fixed pilot through a hole in the angled blade, stabilized mount and utilizing a variant thread form spindle to effectively spiral slice a potato. It is an effective invention inducing action which results in the accomplishment of a spiral sliced potato with significant attributes original in their design .